(19) World Intellectual Property Organization International Bureau



) CORRE CONTROL IN THE TO ENGINE THE FIRST OF THE BOOK CONTROL TO THE CORRESPONDENCE OF THE CORRESPONDENCE OF THE

(43) International Publication Date 17 July 2003 (17.07.2003)

PCT

(10) International Publication Number WO 03/058059 A1

(51) International Patent Classification7:

F03D 3/00

(21) International Application Number: PCT/SE02/02406

(22) International Filing Date:

19 December 2002 (19.12.2002)

(25) Filing Language:

Swedish

(26) Publication Language:

English

(30) Priority Data: 0200064-4

10 January 2002 (10.01.2002) S

(71) Applicant (for all designated States except US): SWEDISH VERTICAL WIND AB [SE/SE]; Geijersgatan 56, S-752 31 Uppsala (SE).

(72) Inventors; and

WO 03/058059 A1

(75) Inventors/Applicants (for US only): BERNHOFF, Hans

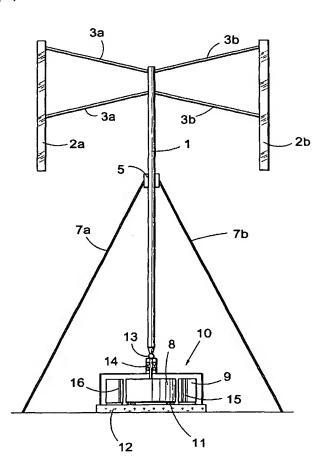
[SE/SE]; ., Geijersgatan 56 A, S-752 31 Uppsala (SE). **LEIJON, Mats** [SE/SE]; ., Hävelvägen 6, S-756 47 Uppsala (SE).

(74) Agents: GROTH & CO KB et al.; Box 6107, S-102 32 Stockholm (SE).

(81) Designated States (national): AE, AG, AL, AM, AT (utility model), AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ (utility model), CZ, DE (utility model), DE, DK (utility model), DK, DM, DZ, EC, EE (utility model), EE, ES, FI (utility model), FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK (utility model), SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

[Continued on next page]

(54) Title: WIND POWER PLANT WITH VERTICAL AXIS TURBINE



(57) Abstract: The present invention relates to a wind-power unit comprising a wind turbine and an electric generator connected to the wind turbine. The stator of the generator has a winding comprising a high-voltage cable comprising a core of conducting material, a first layer of semiconducting material surrounding the core. An insulating layer of solid material surrounds the first layer, and the insulating layer is surrounded by a second layer of semiconducting material. In accordance with the invention the wind turbine is provided with a plurality of turbine blades running substantially vertically and connected to a turbine shaft running substantially vertically, and the generator is arranged at the lower end of the turbine shaft. The invention also relates to a wind-power plant, the use of a wind-power unit and a method of generating electric power.



(84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declaration under Rule 4.17:

— of inventorship (Rule 4.17(iv)) for US only

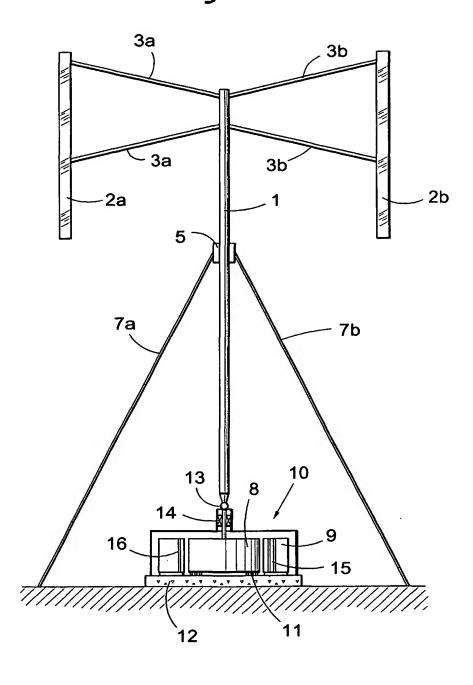
Published:

- with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

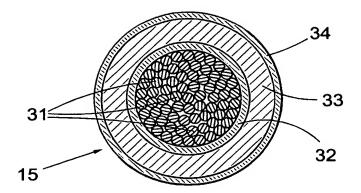


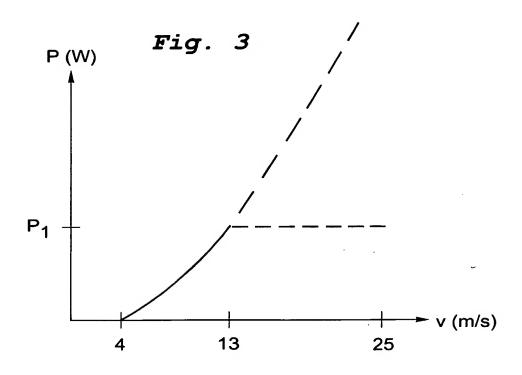
Fig. 1



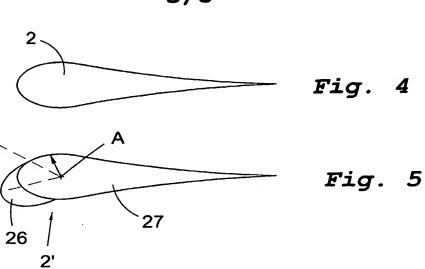
2/5

Fig. 2

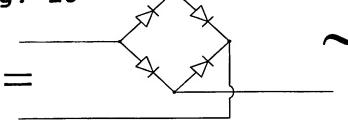


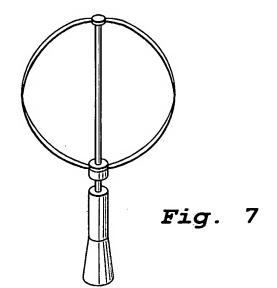




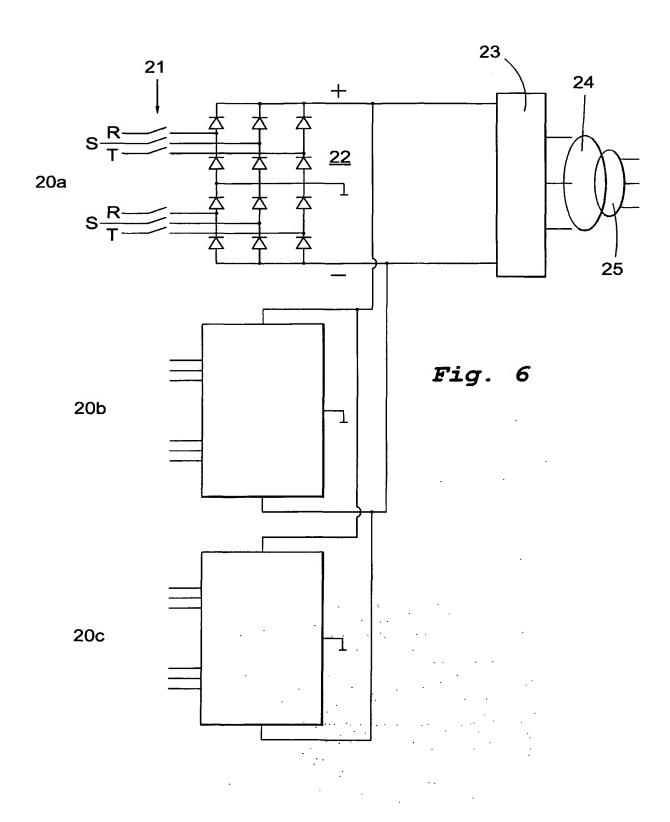




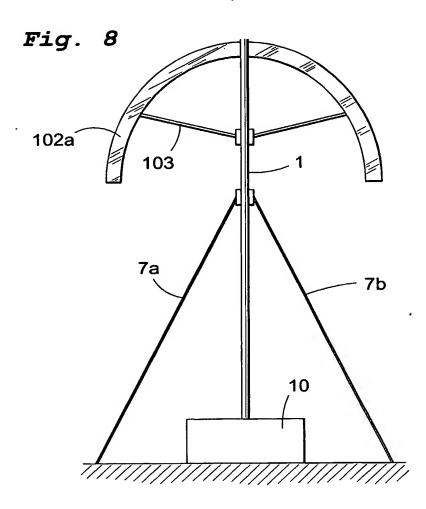


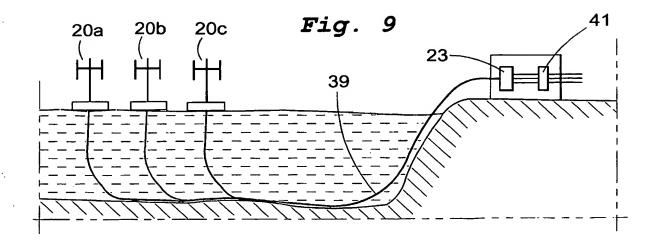


4/5









A. CLASSIFICATION OF SUBJECT MATTER IPC7: F03D 3/00 According to International Patent Classification (IPC) or to both national classification and IPC **B. FIELDS SEARCHED** Minimum documentation searched (classification system followed by classification symbols) IPC7: F03D Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched SE,DK,FI,NO classes as above Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) EPO-INTERNAL, WPI DATA C. DOCUMENTS CONSIDERED TO BE RELEVANT Citation of document, with indication, where appropriate, of the relevant passages Relevant to claim No. Category* WO 0074198 A1 (ABB AB), 7 December 2000 (07.12.00), page 14, line 31 - line 33; page 18, line 6 - line 12, figure 4 1-12,15-29 Υ 14 A EP 0802324 A1 (HÖRICHT, ROLF), 16 April 1997 (16.04.97), page 4, line 41 - line 43; page 11, 1-13,15-29 Υ line 3 - line 6, figures 3,13 14 A 1-29 US 4449053 A (HOWARD R. KUTCHER), 15 May 1984 A (15.05.84), page 2, line 5 - line 20; page 3, line 57 - line 61, figure 1 Further documents are listed in the continuation of Box C. See patent family annex. Special categories of cited documents: later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention document defining the general state of the art which is not considered to be of particular relevance earlier application or patent but published on or after the international document of particular relevance: the claimed invention cannot be filing date considered novel or cannot be considered to involve an inventive document which may throw doubts on priority claim(s) or which is step when the document is taken alone cited to establish the publication date of another citation or other document of particular relevance: the claimed invention cannot be special reason (as specified) considered to involve an inventive step when the document is combined with one or more other such documents, such combination document referring to an oral disclosure, use, exhibition or other being obvious to a person skilled in the art document published prior to the international filing date but later than "&" document member of the same patent family Date of mailing of the international search report Date of the actual completion of the international search n 1 -04- 2003 <u>28 March 2003</u> Authorized officer Name and mailing address of the ISA/ **Swedish Patent Office** Box 5055, S-102 42 STOCKHOLM Tomas Erlandsson/MN

Telephone No. + 46 8 782 25 00

Facsimile No. +46 8 666 02 86



Internal application No.
PCT 02/02406

		101/25 02/		
C (Continu	nation). DOCUMENTS CONSIDERED TO BE RELEVANT			
Category*			Relevant to claim No	
A	US 4050246 A (GASTON BOURQUARDEZ), 27 Sept 197 (27.09.77), page 2, line 13 - line 15; pag line 35 - line 41; page 2, line 46 - line figure 1, abstract, page 5 - page 6	7 e 2, 50,	1-29	
A .	US 6320273 B1 (OTILIO NEMEC), 20 November 2001 (20.11.01), page 10 - page 13, figure 2		1-29	·
ı		•		
			·	
•				

INTERNATIONAL SEARCH REPORT

Information on

it family members

30/12/02

Internal application No.
PCT 02/02406

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 0074198 A	1 07/12/00	AU 4938999 / BR 9917306 / EP 1198872 / JP 2003501993	19/02/02 24/04/02 14/01/03
	\$ 1. °	NO 20015811 / SE 9900943 [SE 9903007 [TW 436581 E	00/00/00
EP 0802324 A	1 16/04/97	DE 19615795 / DE 19622119 /	
US 4449053 A	15/05/84	NONE	
US 4050246 A	27/09/77	FR 2345600 /	A,B 21/10/77
US 6320273 E	1 20/11/01	NONE	